

Science Mission Directorate Policy

REQUIREMENTS FOR RESEARCH & ANALYSIS PEER REVIEW AND SELECTION PROCESSES

SMD Policy Document SPD-22B

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1. Overview

The Science Mission Directorate (SMD) uses peer review by subject matter experts (SMEs) to evaluate proposals submitted to the Directorate in response to a NASA Research Announcement (NRA), including the Research Opportunities in Space and Earth Sciences (ROSES) omnibus solicitation. This policy document establishes the minimum required standards for peer review and selection processes of SMD Research & Analysis (R&A) programs to ensure consistent, high-quality reviews while also allowing for the variation in R&A programs across SMD.

The principles of the SMD peer review and selection processes are:

- SMD R&A programs exist to increase the return from SMD missions, in progress or completed, as well as lay the groundwork for future missions.
- SMD uses input from SMEs to evaluate proposals using appropriate factors to assess evaluation criteria (e.g., intrinsic merit, cost reasonableness, programmatic relevance; see Guidebook for Proposers).
- SMD places high value on the competent, unconflicted, respectful, inclusive, and timely review of all compliant and responsive proposals.
- SMD protects the confidentiality of proposers and reviewers as well as the sensitive and proprietary content of submitted proposals.
- SMD entrusts its Program Officers to implement its policies and practices and present well-supported selection recommendations to the Selection Officials.
- SMD entrusts its Selection Officials to advance its strategic goals and maximize science return within programmatic constraints when making selection decisions.

This policy document focuses on the full proposals discussed in peer review panels. See Note [1] for reviews with binding two-step proposal processes and see Note [2] for non-panel reviews. Appendix A provides applicable documents.

2. Definitions

2.1 Peer Review: the process of the evaluation of a set of proposals submitted to SMD.

2.1.1 Individual Review: the evaluation of a given proposal by a single reviewer (panel or non-panel) produced without discussion with any other reviewer (i.e., prior to or separate from the Review Panel).

2.1.2 Panel Evaluation: the document containing a Review Panel's final assessment of a given proposal. This non-consensus document is a consolidated compilation of the Individual Reviews, as informed by the Review Panel's discussion.

2.1.3 Individual Rating: the rating from an individual Panel Reviewer for a given evaluation criterion for a given proposal, as informed by the Review Panel's discussion.

2.1.4 Panel Rating: the median of the Individual Ratings of the Panel Reviewers.

2.2 Review Panel: a group of individuals organized by NASA to meet (virtually or in person) to conduct the discussion and evaluation of a set of proposals in a Peer Review.

2.2.1 Panel Reviewer: an SME assigned to a Review Panel for the discussion and evaluation of a set of proposals within that panel (§3.1, §3.2).

2.2.2 External Reviewer: an SME providing independent, written evaluations for a set of proposals in a Peer Review, who need not attend the Review Panel (§3.1).

2.2.3 Panel Chair: the member of a Review Panel with responsibilities related to ensuring the timely and proper conduct of the Peer Review (§3.3).

2.3 Program Officer: a NASA representative (defined for the purposes of this document as a NASA or detailed Civil Servant, Intergovernmental Personnel Act [IPA] Employee, or contractor) responsible for a Peer Review. Certain Program Officer activities required during a Peer Review are "inherently governmental" (e.g., see OMB Circular A-76) and are noted below (§3.4) as being restricted to, or requiring approval by, a Civil Servant or IPA.

2.3.1 Panel Official: a NASA representative (see above) to whom the Program Officer has delegated some of their responsibilities for a specific Review Panel. References hereafter to the Program Officer extend to any Panel Official to whom those responsibilities are delegated.

2.4 Selection Official: the NASA representative who decides which proposals in a Peer Review are selected for NASA funding.

2.4.1 Selection Recommendation: the disposition (e.g., selected, selectable, declined, non-responsive, deferred) of a set of proposals in a Peer Review recommended by the Program Officer to the Selection Official.

2.4.2 Selection Decision: the disposition of a set of proposals in a Peer Review decided by the Selection Official.

3. Roles & Responsibilities

3.1 All Reviewers (Panel and External) shall:

- 3.1.1 Keep the entire Peer Review confidential (see NPR 1080.1, Guidebook for Proposers).
- 3.1.2 Alert the Program Officer of any real or perceived conflicts of interest or bias in their participation in the discussion or evaluation of any proposal (see Guidebook for Proposers, SPD-01, SPD-16, SPD-40, NPR 1080.1, SP-2018-371).
- 3.1.3 Provide Individual Reviews that are competent, unconflicted, and unbiased. Panel Reviewers shall also familiarize themselves with all the proposals before the Review Panel.
- 3.1.4 Agree and adhere to any applicable code(s) of conduct.

3.2 Panel Reviewers shall:

- 3.2.1 When serving as **Primary Reviewer**, lead the discussion and drafting of the Panel Evaluation; work with the Program Officer to ensure the Panel Evaluation reflects the panel discussion and is informative to NASA and the proposer (§4.3.1, §4.3.2).
- 3.2.2 When serving as the **Secondary Reviewer**, actively participate in the panel discussion and assist the Primary Reviewer in drafting the Panel Evaluation.
- 3.2.3 Participate in discussions of, and provide Independent Ratings for, all proposals before the Review Panel, unless prevented by a real or perceived conflict of interest or bias.

3.3 The **Panel Chair** is the member of the Review Panel who shall:

- 3.3.1 Shepherd discussions so the Review Panel stays on topic and on schedule.
- 3.3.2 Aid the Program Officer in upholding any applicable code(s) of conduct.
- 3.3.3 Ensure the Panel Evaluations and Ratings reflect the Review Panel's discussions.

3.4 The **Program Officer** has the responsibility and authority for all aspects of the Peer Review and is accountable to the Selection Official. The Program Officer, who may delegate some of the following responsibilities to Panel Officials (§2.3.1) and also serve as Panel Chair, shall:

- 3.4.1 Follow all applicable SMD policies and practices (see Appendix A) during the Peer Review, which in turn ensures compliance with all applicable Federal regulations.
- 3.4.2 Follow documented standards for eliminating or mitigating all real or perceived conflicts of interest or bias in the Peer Review processes; ensure records exist of the handling of any real or perceived conflicts of interest within the Review Panel (see SPD-01, SPD-05, SPD-16, SPD-40, SP-2018-371, NPR 1080.1, GCAM).

- 3.4.3** Ensure the entire Peer Review is kept confidential (see NPR 1080.1, Guidebook for Proposers, GCAM).
- 3.4.4** Complete the Peer Review in a timely manner, with Selection Decisions (or an update; §4.4.3) delivered to proposers within 150 days after the proposal due date (or submission date, in the case of no-due-date programs).
- 3.4.5** Appoint all Reviewers and ensure they are competent to evaluate their assigned proposals as well as free from any statutory and organizational conflicts of interest; eliminate any other known conflicts of interest (e.g., scientific, ethical) or bias that would prevent Reviewers from providing (or appearing to provide) fair evaluations. Final decisions to invite Reviewers must be made or approved by a Civil Servant or IPA.
- 3.4.6** Ensure that best efforts are made to invite Reviewers that reflect the diversity of the science community and ultimately the nation, in line with NASA's core value of inclusion.
- 3.4.7** Ensure Reviewers are well equipped to construct their reviews and participate in the Review Panel by providing timely access to all necessary documents, instructions, and descriptions of roles and responsibilities.
- 3.4.8** Identify, with approval from the Selection Officials, which proposals do not require (e.g., see Note [2] for non-panel reviews) or are not eligible for (e.g., due to non-compliance with the solicitation requirements) a Review Panel.
- 3.4.9** Approve all Panel Evaluations and ensure they are clear, concise, professional, and document the Review Panel's assessment of the proposal against the evaluation criteria in sufficient detail to inform NASA's selection process and provide useful feedback to the proposers. Final approval of Panel Evaluations must be made by a Civil Servant or IPA.
- 3.4.10** Prepare the Selection Recommendation package (see SPD-08) and present it to the Selection Official. The Selection Recommendation must be made by a Civil Servant or IPA.
- 3.4.11** Ensure the entire Peer Review process is conducted in accordance with any applicable code(s) of conduct.

3.5 The Selection Official shall:

- 3.5.1** Appoint the Program Officer responsible for the Peer Review (unless otherwise delegated by the responsible SMD Division Director).
- 3.5.2** Make final decisions on the dispositions of the proposals being considered in the Peer Review.
- 3.5.3** Provide explicit concurrence for all awarded funding (see NPR 1080.1).

4. Requirements for Implementing the Peer Review Process

4.1 Prior to submission of Individual Reviews:

- 4.1.1** The Program Officer shall provide instructions to all Reviewers on identifying, reporting, and avoiding any real or perceived conflicts of interest or bias. Reviewers must self-identify and report any real or perceived conflicts of interest or bias; federal employees must complete a Self Certification Form (see SPD-16).
- 4.1.2** Reviewers shall keep the entire Peer Review confidential. Federal employees serving as reviewers are governed by 41 U.S.C 423, while non-federal-employee reviewers must sign a Nondisclosure Agreement in advance of being given access to any of the full proposals (see NPR 1080.1).
- 4.1.3** The Program Officer shall provide all Reviewers with timely access to the documents needed to construct high-quality reviews, including: all proposals within the Review Panel, the ROSES Summary of Solicitation, all relevant ROSES appendices, the NASA Guidebook for Proposers, any other documents needed to understand the evaluation criteria, and any applicable code(s) of conduct.

4.2 Before and during Review Panels:

- 4.2.1** The Program Officer shall stress the requirement for Panel Reviewers to avoid any real or perceived conflicts of interest or bias. Before the discussion of each proposal, any real or perceived conflicts of interest or bias shall be raised and documented along with their disposition and any mitigation.
- 4.2.2** The Program Officer shall inform all Panel Reviewers that all materials and discussions related to the review must be kept confidential. The Panel Reviewers shall destroy all notes and copies of any proposals at the end of the panel meeting.
- 4.2.3** The Program Officer shall explain to all Panel Reviewers that their role is to provide clear, concise, professional, and non-consensus findings on individual proposals without comparing proposals, rank ordering proposals, or providing selection recommendations.
- 4.2.4** The Program Officer shall remind all Panel Reviewers of the evaluation criteria and instruct them to apply the criteria uniformly and hold all proposals to the same standards. The Program Officer shall ensure that the evaluation criteria used during the Panel Review are the same as those described in the solicitation.
- 4.2.5** The Program Officer and Panel Reviewers shall uphold all applicable code(s) of conduct in order to ensure the quality, integrity, inclusivity, and professionalism of the Review Panel. The Program Officer shall also brief all Panel Reviewers on implicit bias ahead of the panel meeting. Any issues that may affect these aspects of the Review Panel shall be immediately reported to the Program Officer or Panel Official; if those options are not appropriate, the R&A Leads and/or the Senior Advisors for Research and Analysis (SARA) Team may be contacted instead.

4.2.6 All allegations of research misconduct (i.e., fabrication, falsification, or plagiarism; see 14 CFR 1275, NPR 1080.1) reported to or discovered by the Program Officer shall be reported to the NASA Office of the Inspector General for assessment. Program Officers shall instruct Reviewers to continue evaluating proposals with alleged research misconduct as presented and without bias due to the allegation.

4.3 Content and approval of Panel Evaluations:

4.3.1 Panel Evaluations shall, using professional tone and language, clearly and concisely provide constructive feedback to the proposers as well as sufficiently inform NASA's selection process.

4.3.2 Panel Evaluations shall incorporate all relevant findings from the Individual Reviews, as informed by the Review Panel's discussion, that contribute to the Panel Rating. The Review Panel is authorized to accept/reject, in part or in full, or augment findings from the Individual Reviews of External Reviewers based on their discussion. The Panel Evaluation findings on intrinsic merit shall be labeled as "major" or "minor" based on their relative importance to the Panel Rating.

4.3.3 Panel Ratings should be the median of the Individual Ratings of all unconflicted and unbiased Panel Reviewers. A minimum of three unconflicted and unbiased Panel Reviewers shall contribute to the Panel Rating, with more as needed to provide competent evaluations and remain in compliance with SMD requirements. Program Officers must report any deviations from these requirements to the Selection Official in the selection documents.

4.3.4 Comments that do not contribute to Panel Ratings, but may be of interest to the proposers, shall be in a section that is separate from any part of the Panel Evaluation that contributes to any Panel Rating.

4.3.5 Comments about programmatic or other considerations (e.g., see §4.5.2) that should not be visible to proposers shall be in a section of the Panel Evaluation addressed to NASA only.

4.3.6 Panel Evaluations shall be approved by at least the Primary Reviewer, Panel Chair, and Program Officer.

4.3.7 The Program Officer shall only edit Panel Evaluations after the panel meeting to remove inappropriate language or correct erroneous content, with the overall scope of changes approved by the Selection Official. Formatting and grammatical corrections are allowed without approval by the Selection Official.

4.4 Providing Panel Evaluations and Selection Decisions to proposers:

4.4.1 Program Officers shall ensure that each proposer is provided their Panel Evaluation and the Selection Decision (see the GCAM on minimum requirements for Notices of Intent).

- 4.4.2** If Selection Decisions have not been provided to proposers within 150 days of the proposal due date (or submission date, in the case of no-due-date programs), the Program Officer shall provide status notifications to proposers with conservative estimates of when selections are anticipated, every 60 days thereafter until Selection Decisions are delivered.
- 4.4.3** In cases when Selection Decisions are significantly delayed, Program Officers may provide Panel Evaluations to proposers prior to selections, and must provide Panel Evaluations no later than 6 weeks before the next due date of the program (or the one-year anniversary of the original submission date, in the case of no due date).
- 4.4.4** Program Officers shall conduct debriefs and respond to reconsideration requests in accordance with SPD-09.

4.5 Selection Recommendations and Decisions:

- 4.5.1** Selection Recommendations and Selection Decisions shall be documented in accordance with SPD-08.
- 4.5.2** Selection Recommendations should be based on Panel Evaluations, however Program Officers may take into account other considerations, such as:
- Programmatic priorities (e.g., to support current or future missions), which can be specified in the solicitation.
 - Balance across subdisciplines, technologies, methodologies, etc.
 - Support of innovative research needs that warrant selection of high-risk but potentially high-reward investigations.
 - Representation of the breadth and diversity of the research community in terms of career stage, institution type, project size, and other demographics, as permitted by law.
 - Affordability issues (e.g., ability to fund several small investigations over one large investigation).
 - Other factors, such as: evidence for considerable lack of progress, substantial uncosted funds, or non-compliance with policies for prior or existing SMD grants of proposers.
- 4.5.3** The Program Officer shall not change any Panel Ratings after the panel meeting, but instead provide in the selection documents any rationale needed to explain the Selection Recommendation (e.g., why a proposal is recommended over one with a higher Panel Rating; see SPD-08).
- 4.5.4** The Selection Official may fully follow the Program Officer's Selection Recommendations, or make different Selection Decisions. In either case, the rationales must be captured in the selection documentation (see SPD-08).
- 4.5.5** SMD aims for transparency in its Selection Decisions. Program Officers and Selection Officials should make Selection Decisions that can be explained to a proposer or the larger science community, if at all possible.

Notes:

- [1] The above requirements apply to full proposals. In solicitations that use a binding two-step process, where proposers are rejected at the first step (see Guidebook for Proposers), the above requirements for timing (§4.4.2, §4.4.3), feedback (§4.4.4), and selection rationale and approval (§4.5.1, §4.5.4, §4.5.5) are also applicable to the first-step decision.
- [2] The above requirements apply to proposals discussed in Review Panels. If the proposal was not discussed in a panel (e.g., in the case of unsolicited proposals with small-to-moderate budgets; see SPD-04), the Program Officer shall provide to the proposer either a summary or a collection of the Individual Reviews from External Reviewers, edited to only contain content that contributes to the disposition of the proposal, and with best efforts to remove all erroneous or inappropriate content. The above requirements for conflicts of interest (§4.1.1), confidentiality (§4.1.2), quality of reviews (§4.1.3, §4.3.1), timing (§4.4.2, §4.4.3), feedback (§4.4.4), and selection rationale and approval (§4.5.1, §4.5.4, §4.5.5) are also applicable to non-panel reviews.

Appendix A: Applicable Documents

[Title 14 Code of Federal Regulations \(CFR\) Chapter V Part 1275 \(14 CFR 1275\)](#)

[Grant and Cooperative Agreement Manual \(GCAM\)](#)

[Guidebook for Proposers Responding to a NASA Notice of Funding Opportunity](#)

[NPR 1080.1 Requirements for Conduct for NASA Research and Technology](#)

[OMB Circular A-76](#)

[SMD Codes of Conduct for Review Panels](#)

[SP-2018-371 Guidelines for Promoting Scientific and Research Integrity](#)

[SPD-01 Handling Conflicts-of-Interest for Peer Reviews](#)

[SPD-02 Handling Late Proposals](#)

SPD-04 Handling Non-competitive Proposals

SPD-05 Preventing Financial Conflicts for IPA Employees

SPD-08 Requirements for Selection Decision Documents for NASA Research Announcements

[SPD-09 Requesting Reconsideration of NRA Proposal Declination](#)

[SPD-16 Preventing Financial Conflicts for Civil Servants](#)

SPD-17 Policy on Observers at Panel Reviews

SPD-40 Standards for Dual-Anonymous Peer Review